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## Appendix E: Rules for Working with Decimals

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To **add** decimal numbers, align the decimal points vertically.  
Add whole numbers to whole numbers, tenths to tenths, hundredths to hundredths and so on.  
(See Unit 2 Topic 1)

To **subtract** decimal numbers, align the decimal points.  
Subtract whole numbers from whole numbers, tenths from tenths, hundredths from hundredths and so on. (See Unit 2 Topic 2)

To **multiply a decimal by 10**:  
Move the decimal point one place to the right. (See Unit 3 Topic 1)

To **multiply a decimal by 0.1**:  
Move the decimal point one place to the left. (See Unit 3 Topic 2)

To **divide a decimal by 10**:  
Move the decimal point one place to the left. (See Unit 4 Topic 1)

To **divide a decimal by 0.1**:  
Move the decimal point one place to the right. (See Unit 4 Topic 1)

To **multiply any decimal by any decimal**:  
Count the total number of decimal places in the numbers being multiplied.  
This will be the number of decimal places in the product. (See Unit 3 Topic 3)

To **divide any decimal by any decimal**:

- Step 1:** Change the divisor from a decimal to a whole number by moving the decimal point to the right.
- Step 2:** Move the decimal point in the dividend to the right the same number of places as it moved in Step 1.
- Step 3:** Put a decimal point in the quotient above the dividend decimal point.
- Step 4:** Divide as you would with whole numbers. (See Unit 4 Topic 3)

To change from **a percent to a decimal**:  
Move the decimal point 2 places left. (See Unit 6 Topic 2)

To change from **a decimal to a percent**:  
Move the decimal point 2 places right. (See Unit 6 Topic 2)

To change from **a fraction to a decimal**:  
Divide the numerator by the denominator. (See Unit 1 Topic 6)

To change from **a decimal to a fraction**:



Write the decimal part as a fraction of tenths, hundredths, thousandths and so on.  
(See Unit 1 Topic 2)

To change from **a fraction to a percent**:

Divide the numerator by the denominator to get a decimal. Then, move the decimal point 2 places right. (See Unit 6 Topic 3)

To change from **a percent to a fraction**:

Write the percent as a fraction with denominator 100. (See Unit 6 Topic 3)

To find a **percent of** or a **percentage of** some amount:

Write the percent as a decimal and multiply the amount. (See Unit 7 Topic 1)

To find **percent increase**:

Find the *amount* of increase as a fraction of the original amount. Write the fraction as a percent.  
(See Unit 7 Topic 3)

To find **percent decrease**:

Find the *amount* of decrease as a fraction of the original amount. Write the fraction as a percent.  
(See Unit 7 Topic 4)

**Order of operations:**

1. Work from left to right if you are only adding and subtracting.
2. Work from left to right if you are only multiplying and dividing.
3. Do  $\times$  and  $\div$  before  $+$  and  $-$
4. Do what is inside parentheses or brackets first. (See Unit 5 Topic 1)

To calculate the **area of a rectangle**: Multiply its length by its width. (See Unit 3 Topic 4)

To calculate the **total price** or cost: Multiply the number of items by the unit price.  
(See Unit 3 Topic 4)

To calculate **distance traveled**: Multiply time by speed. (See Unit 5 Topic 2)